State of Montana
&
Open Source

Information Technology Board
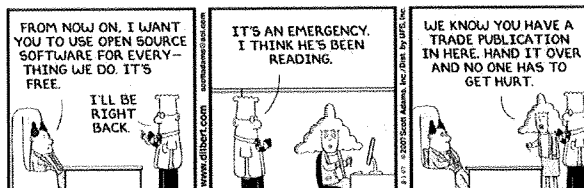## August 9, 2007
Meeting

Mike Boyer
MT Dept of Admin/ITSD

INFORMATION TECHNOLOGY SERVICES DIVISION

Everybody is getting in on the act ...

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Open Source Topics

- "The software problem"
  - "Why do we care about code?"
- Open Source Ideal
- Open Source adoption issues
- Total Cost of Ownership
- Montana Open Source Status/Plans

What are the problems with software?

Some Real; Some Perceived

- Cost
  - Licenses
  - Client Access Licenses
  - Vendor support charges
- Quality
  - Functions/Features
  - Performance
  - Security!
- Control
  - Vendor release/version plans
  - "Forced" migrations

Microsoft is the poster child for all these issues.
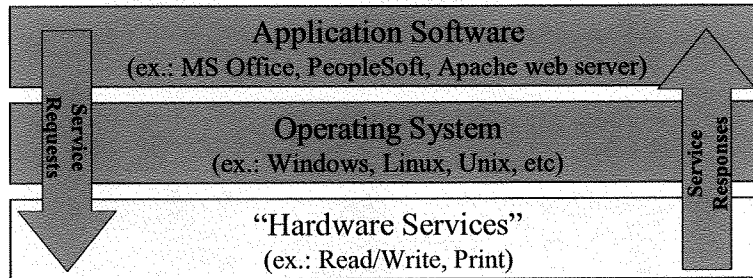
"Software Stack"
Different Software for Different Jobs

Application Software
(ex.: MS Office, PeopleSoft, Apache web server)

Operating System
(ex.: Windows, Linux, Unix, etc)

"Hardware Services"
(ex.: Read/Write, Print)

Service Requests

Service Responses

Source and Object Code

Ex: "If Salary > $25,000 then perform Withholding-Adjust-Routine."

Source Code
(ex.: C++, VB, PLS, COBOL)

Compile/Interpret

Object Code
(Machine Executable Instructions)

Ex: "0010101101011001000101110111000111010101010 ..."

The Software World
(Before Open Source)

| Create it Yourself | Purchased Software |

Source Code
(ex : C++, VB, PLS, COBOL)

Compile/Interpret

Object Code
(Machine Executable Instructions)

Software Vendors &
"Object Code Only"

- Vendor Motivation
  - Protect intellectual property
  - "Capture" the customer for long-term business relationship
  - Secure long-term revenue stream through support charges

  $$$$!

- Customer Impact
  - At the mercy of the vendor for enhancements & fixes
  - At the mercy of vendor product support plans
  - May/not provide value relative to cost

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The Open Source Ideal

- Source code is freely available
- Community of developers
  - "Open source promotes software reliability and quality by supporting independent peer review and rapid evolution of source code." (Open Source Org.)
  - Countless contributors motivated by desire to develop the best product possible
  - Control group to assure kernel quality, release versions, etc.
- "Free" software
  - License prohibits charging for Open Source kernel software
- Users control their own destiny; not vendors with proprietary interests
- Address proprietary software issues:
  - Cost
  - Quality
  - Control

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Open Source Movement Background

- Movement's origins in the European academic community (Linus Torvalds) in early-mid '90s.
- Initial focus on the operating system.
  - "Linus' UNIX" shortened to Linux
  - Anyone could submit source code improvements
- Spread to other communities and other software layers.
- Backlash against Microsoft fueled the movement.

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Operating System

- Linux kernel
  - True Open Source
  - No licensing fee
- Portability across hardware
  - Makes hardware a "commodity"
- Practical Limitations
  - Not a complete Operating System; missing key functions (ex.: device drivers)
  - No vendor to provide needed support
  - No vendor to provide timely updates and patches

ITSD's Management Perspective

- State IT services are critical to the delivery of State services affecting public safety and wellbeing.
- We need stable, reliable, *__"bet your business"__* infrastructure.
- We rely on quality vendors for infrastructure software.
- *ITSD does not want to be in the systems software development & support business.*

Operating System (cont.)

- Solution – the "Linux Distribution"
  - Vendors "distribute" Linux free and *charge* for other components and services.
    - Quasi-proprietary modules to provide missing capabilities of the kernel
    - Support for updates, upgrades and patches
- Consequences
  1. "Free" software suddenly isn't as free as we had hoped.
  2. Vendors (Red Hat, SuSE, etc.) differentiate themselves through the "add-ons" and services

     However ... depend on their unique features and you are back in the "proprietary trap"

Application Software (Open Office)

- Similar "Distribution" model
  - Open Office kernel with additional features and support
  - Surrounded with look/feel/function enhancements
  - Vendor support less an issue than for Operating Systems – except for security patches!
- Microsoft compatibility concerns
  - Many vendors have built applications that rely on MS Office functions (PeopleSoft/Excel)
  - Product users have developed countless millions of macros for MS products.
  - Countless documents & spreadsheets in MS formats
    - Most products can use MS file formats
    - MS has committed to using "Open Doc" standard format

Open Source Adoption Issues

- Operating System layer
  - Comparatively easy for "larger" organizations
  - Unix skill base translates effectively
  - Special use for server consolidation; great result!
- Enabling application software layer
  - Web servers – little issue – have about 60% market share
  - Database (My SQL) – minimal technical issue
- User applications layer
  - Compatibility (ex.: Excel Pivot Tables vs. OO DataPilot for PeopleSoft)
  - File & macro compatibility/conversion
  - Gartner, Yankee Group describe the TCO as "similar"
  - "Portfolio Management" concern – how many products justify the Total Cost of Ownership?

Total Cost of Ownership (TCO)

- Licensing costs "Free ..."
- Ongoing support costs
- Administration costs
  - Ease of administration and amount of attention needed
  - "Portfolio" impact
- Hardware requirements
  - Relative to alternative products
- Transition costs
  - Lost productivity during transition
  - Training costs
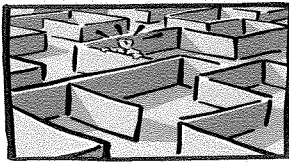 - Conversion costs

"... like a puppy (or horse)!"

Summary

- "The software problem"
  - "Why do we care about code?"
- Open Source Ideal
- Open Source adoption issues
- Total Cost of Ownership

- Source vs. Object
  - Control
  - $$$
  - Proprietary vs Open
- "Freedom" vs. "Free"
- Commercial "distributions"
- Licensing cost only one factor in TCO

Open Source in ITSD

- Server (Operating System) installations
  - 40 Linux servers on Dell and IBM Blade servers
  - 41 VmWare virtual Windows machines with about 300 Windows partitions
    - "Virtualization" makes one physical server act like many smaller ones reducing space, power and cooling demand
- Software
  - Apache/Tomcat on all Linux servers
  - Additional utility software (Samba, etc)

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Agency Use of Open Source

- Agencies have 107 servers running an Open Source operating system
  - Mix of Red Hat and SuSE
- Apache is commonly used for agency web servers
- Some agencies are involved in "consortium applications (e.g.: Corrections) using Open Source platforms
- Legislative Branch has the most explicit direction and broadest commitment for the use of Open Source

  Information based on agency planning documents and survey for 2006 Biennial Report

Trends in MT Use of Open Source

- Operating System growth has been steady and we expect it to continue
  - Most activity in larger agencies
- Open Source web server software has become the dominant product
- Virtualization has proven itself to be very cost effective and continues to grow
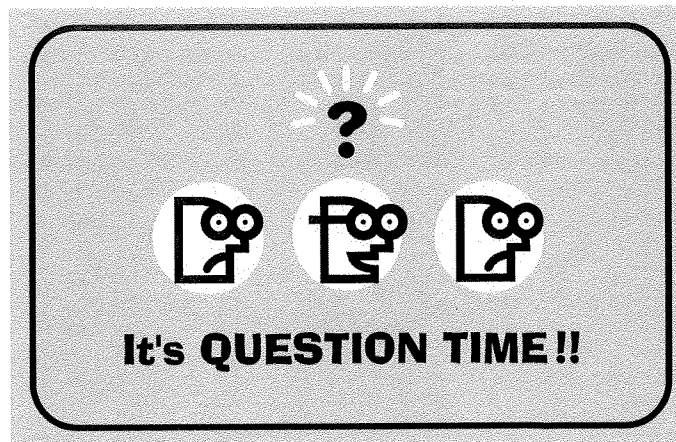- Desktop interest limited at this time

Opportunity Area

- Open Source desktop needs to be explored.
- TCO must be rigorously examined
  - Purchase
  - Implementation
  - Ongoing costs
- Project to be launched with ITMC

?

It's QUESTION TIME !!